

ZXMN3A02N8

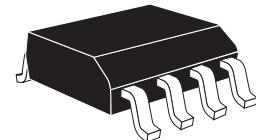
30V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS} = 30V$; $R_{DS(ON)} = 0.025\Omega$ $I_D = 9.0A$

DESCRIPTION

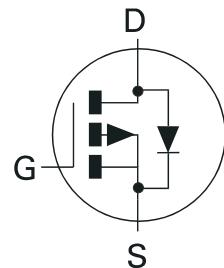
This new generation of TRENCH MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.



FEATURES

SO8

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- Low profile SOIC package



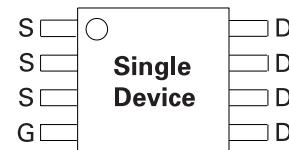
APPLICATIONS

- Disconnect switches
- Motor control

ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN3A02N8TA	7"	12mm	500 units
ZXMN3A02N8TC	13"	12mm	2500 units

PINOUT



Top View

DEVICE MARKING

- ZXMN
3A02

ZXMN3A02N8

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	30	V
Gate Source Voltage	V_{GS}	± 20	V
Continuous Drain Current $V_{GS}=-10V$; $T_A=25^\circ C$ (b) $V_{GS}=-10V$; $T_A=70^\circ C$ (b) $V_{GS}=-10V$; $T_A=25^\circ C$ (a)	I_D	9.0 7.2 7.3	A
Pulsed Drain Current (c)	I_{DM}	44	A
Continuous Source Current (Body Diode) (b)	I_S	3.2	A
Pulsed Source Current (Body Diode) (c)	I_{SM}	44	A
Power Dissipation at $T_A=25^\circ C$ (a) Linear Derating Factor	P_D	1.56 12.5	W mW/°C
Power Dissipation at $T_A=25^\circ C$ (b) Linear Derating Factor	P_D	2.5 20	W mW/°C
Operating and Storage Temperature Range	$T_J:T_{stg}$	-55 to +150	°C

THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)	$R_{\theta JA}$	80	°C/W
Junction to Ambient (b)	$R_{\theta JA}$	50	°C/W

NOTES

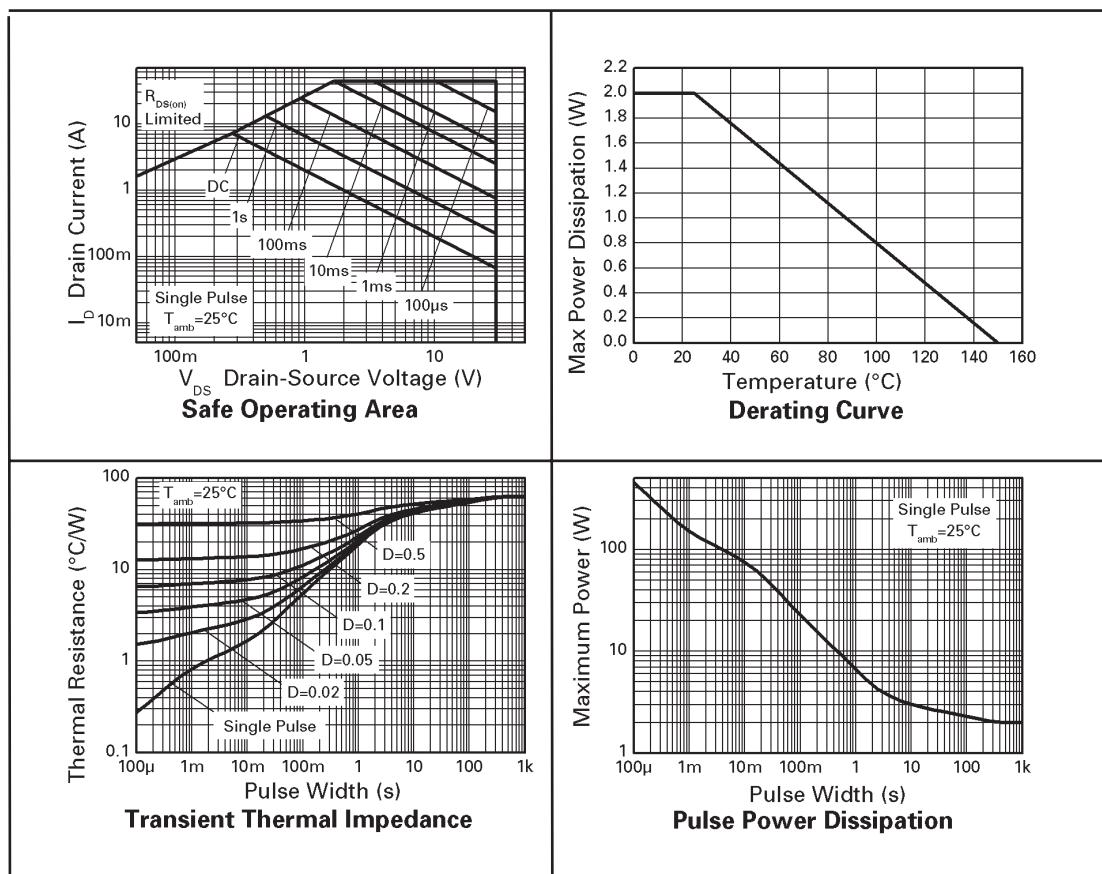
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(b) For a device surface mounted on FR4 PCB measured at $t \leq 10$ secs.

(c) Repetitive rating 25mm x 25mm FR4 PCB, $D = 0.02$, pulse width 300μs - pulse width limited by maximum junction temperature.

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CHARACTERISTICS



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ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^\circ C$ unless otherwise stated).

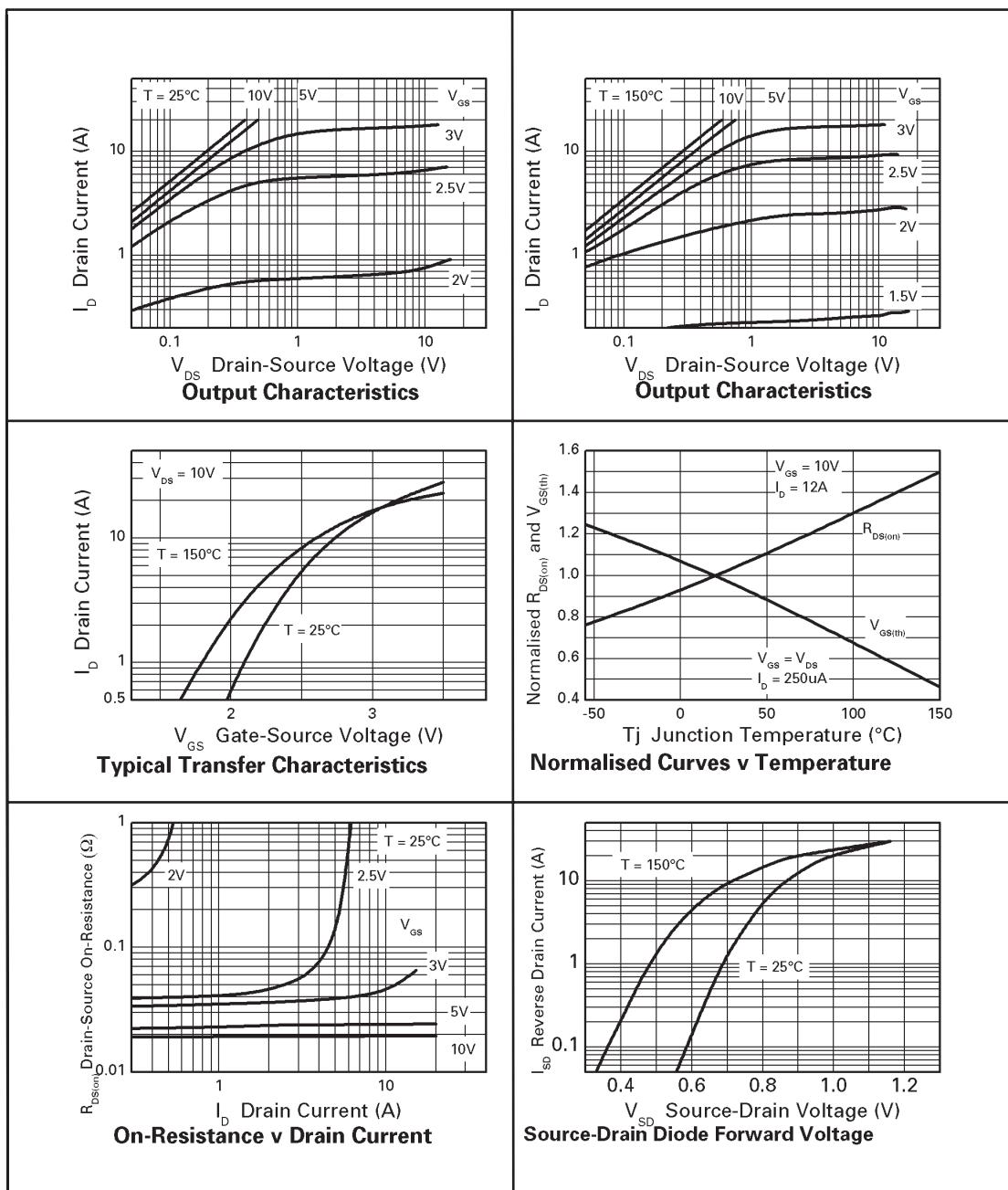
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	30			V	$I_D=250\mu A, V_{GS}=0V$
Zero Gate Voltage Drain Current	I_{DSS}			1	μA	$V_{DS}=30V, V_{GS}=0V$
Gate-Body Leakage	I_{GSS}			100	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
Gate-Source Threshold Voltage	$V_{GS(th)}$	1.0			V	$I_D=250\mu A, V_{DS}= V_{GS}$
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$			0.025 0.035	Ω	$V_{GS}=10V, I_D=12A$ $V_{GS}=4.5V, I_D=10.2A$
Forward Transconductance (1)(3)	g_{fs}		22		S	$V_{DS}=10V, I_D=12A$
DYNAMIC (3)						
Input Capacitance	C_{iss}		1400		pF	
Output Capacitance	C_{oss}		209		pF	$V_{DS}=25V, V_{GS}=0V, f=1MHz$
Reverse Transfer Capacitance	C_{rss}		120		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	$t_{d(on)}$		3.9		ns	
Rise Time	t_r		5.5		ns	
Turn-Off Delay Time	$t_{d(off)}$		35.0		ns	$V_{DD} = 10V, I_D = 1A$ $R_G \geq 6.0\Omega, V_{GS} = 4.5V$ (refer to test circuit)
Fall Time	t_f		7.6		ns	
Gate Charge	Q_g		14.5		nC	$V_{DS}=15V, V_{GS}=5V, I_D=5.5A$ (refer to test circuit)
Total Gate Charge	Q_g		26.8		nC	$V_{DS}=15V, V_{GS}=10V, I_D=5.5A$ (refer to test circuit)
Gate-Source Charge	Q_{gs}		4.7		nC	
Gate-Drain Charge	Q_{gd}		4.7		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V_{SD}		0.85	0.95	V	$T_J=25^\circ C, I_S=9A, V_{GS}=0V$
Reverse Recovery Time (3)	t_{rr}		17		ns	$T_J=25^\circ C, I_F=5.5A, di/dt= 100A/\mu s$
Reverse Recovery Charge (3)	Q_{rr}		8.3		nC	

NOTES

- (1) Measured under pulsed conditions. Width $\leq 300\mu s$. Duty cycle $\leq 2\%$.
- (2) Switching characteristics are independent of operating junction temperature.
- (3) For design aid only, not subject to production testing.

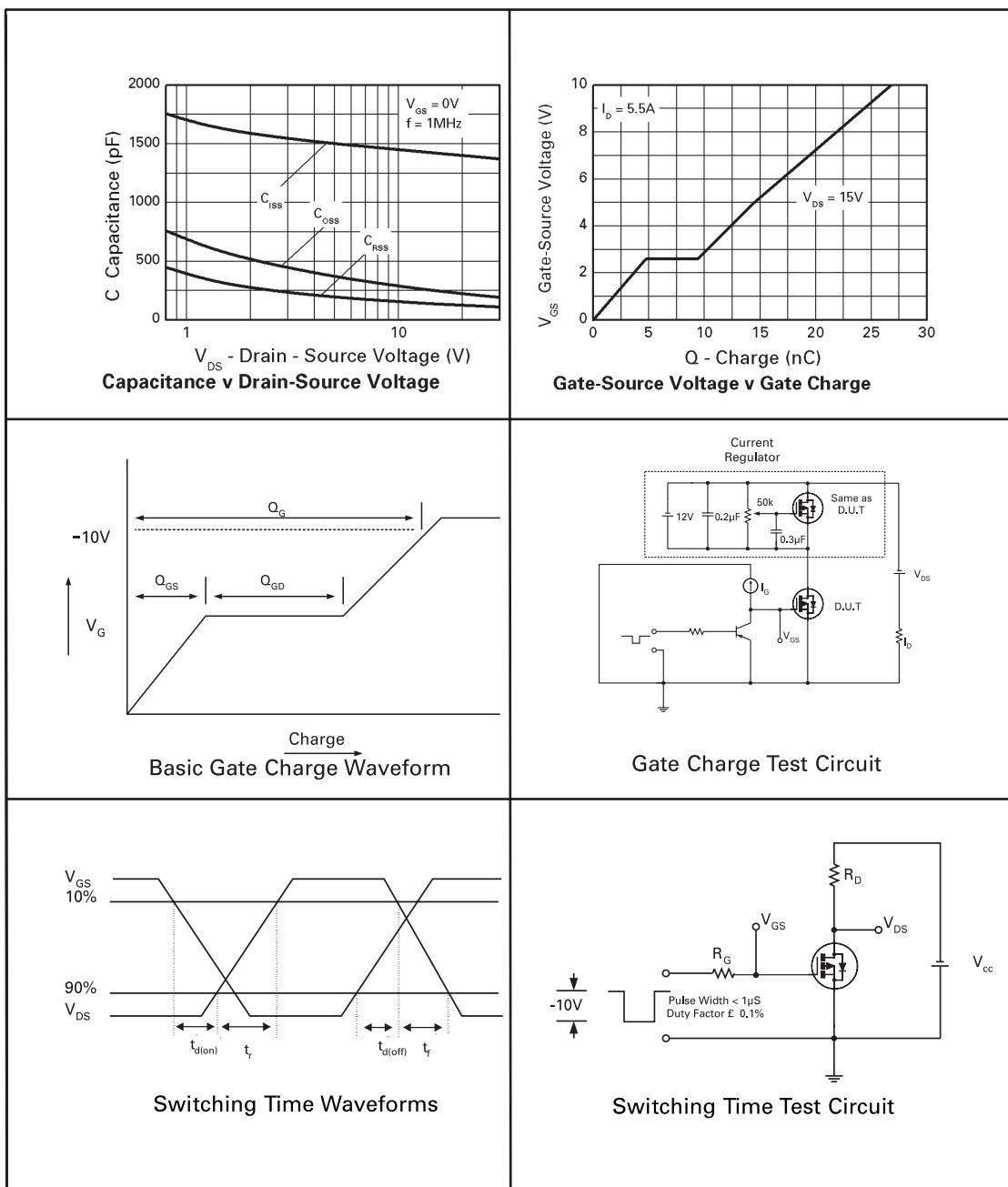
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CHARACTERISTICS



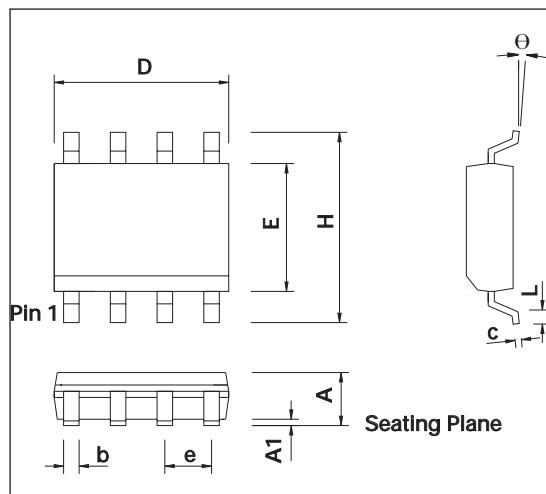
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CHARACTERISTICS



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PACKAGE OUTLINE



CONTROLLING DIMENSIONS ARE IN INCHES
APPROX IN MILLIMETRES

PACKAGE DIMENSIONS

DIM	INCHES		MILLIMETRES	
	MIN	MAX	MIN	MAX
A	0.053	0.069	1.35	1.75
A1	0.004	0.010	0.10	0.25
D	0.189	0.197	4.80	5.00
H	0.228	0.244	5.80	6.20
E	0.150	0.157	3.80	4.00
L	0.016	0.050	0.40	1.27
e	0.050 BSC		1.27 BSC	
b	0.013	0.020	0.33	0.51
c	0.008	0.010	0.19	0.25
θ	0°	8°	0°	8°
h	0.010	0.020	0.25	0.50

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Europe	Americas	Asia Pacific	
Zetex plc Fields New Road Chadderton Oldham, OL9 8NP United Kingdom Telephone: (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com	Zetex GmbH Streifeldstraße 19 D-81673 München Germany Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 9 europe.sales@zetex.com	Zetex Inc 700 Veterans Memorial Hwy Hauppauge, NY 11788 USA Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Zetex (Asia) Ltd 3701-04 Metroplaza Tower 1 Hing Fong Road Kwai Fong Hong Kong Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com

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